AMENDMENTS TO THE CLAIMS

This listing of the claims will replace all prior versions and listings of the claims in the application.

1-22. (Cancelled)

23. (Currently amended) A method for converting pyruvate and erythrose 4-phosphate (E4P) to 3-deoxy-D-arabino-heptulosonate-7-phosphate (DAHP), the method comprising contacting an isolated or recombinant 2-keto-3-deoxy-6-phosphogalactonate (KDPGal) aldolase having an amino acid sequence of SEQ ID NO:4 with a solution containing pyruvate and E4P.

24. (Previously presented) The method of Claim 23 further comprising contacting said DAHP with a 3-dehydroquinate (DHQ) synthase, thereby forming DHQ.

25. (Previously presented) The method of Claim 24 further comprising contacting said DHQ with a DHQ dehydratase, thereby forming 3-dehydroshikimate.

26. (Previously presented) The method of Claim 23, wherein said method is performed within a recombinant cell.

27. (Original) The method of Claim 26, wherein said host cell was produced by transforming the cell with nucleic acid encoding at least one of a KDPGal aldolase or a DHQ synthase.

28. (Original) The method of Claim 26, wherein said recombinant cell contains at least one recombinant transketolase or at least one recombinant transaldolase.

29. (Currently amended) A method for converting pyruvate and erythrose 4-phosphate (E4P) to 3-deoxy-D-arabino-heptulosonate-7-phosphate (DAHP), comprising contacting [[a]] an isolated or recombinant 2-keto-3-deoxy-6-phosphogalactonate (KDPGal) aldolase having an amino acid sequence of SEQ ID NO:4 with pyruvate and E4P, wherein said contacting converts pyruvate and E4P to DAHP.

30. (Previously presented) The method according to Claim 29, further comprising contacting DAHP with a recombinant DHQ synthase to produce DHQ from said DAHP.

31-37. (Cancelled)

38. (Currently amended) A process for preparing ~~at least one of~~ 3-deoxy-D-arabino-heptulosonate-7-phosphate (DAHP) ~~or a derivative thereof~~, said process including the steps of:

1) providing

(A) erythrose 4-phosphate (E4P) and pyruvate,

(B) [[a]] an isolated or recombinant 2-keto-3-deoxy-6-phosphogalactonate (KDPGal) aldolase having an amino acid sequence of SEQ ID NO:4, and ~~optionally a 3-dehydroquinate (DHQ) synthase~~,

(C) an aqueous medium,

2) contacting in said medium, said KDPGal aldolase with said E4P and said pyruvate under conditions suitable for said KDPGal aldolase to catalyze the formation of 3-deoxy-D-arabino-heptulosonate-7-phosphate (DAHP) from the E4P and pyruvate~~, and optionally contacting said DAHP with said DHQ synthase under conditions suitable for said DHQ synthase to catalyze the formation of 3-dehydroquinate from the DAHP;~~

~~3) optionally recovering at least one of DAHP, DHQ, 3-dehydroshikimate (DHS), from said medium~~.

39-45. (Cancelled)

46. (Currently amended) A method for converting pyruvate and erythrose 4-phosphate (E4P) to 3-deoxy-D-arabino-heptulosonate-7-phosphate (DAHP), comprising contacting an isolated or recombinant 2-keto-3-deoxy-6-phosphogalactonate (KDPGal) aldolase having an amino acid sequence of SEQ ID NO:4 with pyruvate and E4P, wherein said contacting converts pyruvate and E4P to DAHP, ~~The method of Claim 29,~~ wherein the recombinant KDPGal aldolase ~~is selected from a polypeptide comprising~~

~~an amino acid sequence having least 70% homology with SEQ ID NO:2, SEQ ID NO:4, or SEQ ID NO:6; and~~

comprises at least one mutation selected from the group consisting of X10V, X28L, X28M, X42T, X85A, X154F, and X196I.

47. (Previously presented) The method of Claim 29, wherein said contacting step is performed in vivo in a recombinant cell.

48. (Previously presented) The method of Claim 29, further comprising obtaining recombinant KDPGal aldolase from a recombinant cell, and contacting the KDPGal aldolase with pyruvate and E4P in solution to convert pyruvate and E4P to DAHP.

49. (Previously presented) The method of Claim 29, wherein the recombinant KDPGal aldolase has a specific activity for DAHP formation in the range of 0.3 U/mg to 1.3 U/mg.

50. (Currently amended) A method for converting pyruvate and erythrose 4-phosphate (E4P) to 3-deoxy-D-arabino-heptulosonate-7-phosphate (DAHP), comprising contacting an isolated or recombinant 2-keto-3-deoxy-6-phosphogalactonate (KDPGal) aldolase having an amino acid sequence of SEQ ID NO:4 with pyruvate and E4P, wherein said contacting converts pyruvate and E4P to DAHP, ~~The method of Claim 29,~~ wherein the recombinant KDPGal aldolase comprises ~~an amino acid sequence having between 190 to 215 residues and~~ at least one mutation selected from the group consisting of X10V, X28L, X28M, X42T, X85A, X154F, and X196I, and wherein said recombinant KDPGal

aldolase has higher specific activity for 3-deoxy-D-arabino-heptulosonate-7-phosphate (DAHP) formation than a native KDPGal aldolase without said at least one mutation.

51. (Previously presented) The method of Claim 50, wherein said at least one mutation is selected from the group consisting of I10V, ~~V28L, V28M, S42T,~~ V85A, V154F and F196I.

52. (Cancelled)

53. (Previously presented) The method of Claim 50, wherein the recombinant KDPGal aldolase has no mutation that is X70L.

54–60. (Cancelled)

61. (New) The process of claim 38 further comprising recovering DAHP from said medium.

62. (New) The process of claim 38 further comprising:

providing a 3-dehydroquinate (DHQ) synthase, and

contacting said DAHP with said DHQ synthase under conditions suitable for said DHQ synthase to catalyze the formation of 3-dehydroquinate from the DAHP.

63. (New) The process of claim 62 further comprising recovering at least one of DAHP, DHQ, 3-dehydroshikimate (DHS), from said medium.